CLAIMS

We claim:

1. A fuel supply containing a fuel for use by a fuel cell comprising:

an outer casing encasing a fuel compartment containing the fuel, a reactant compartment and a reaction chamber;

wherein the fuel is transported to the reaction chamber and reacts to form reactants comprising hydrogen gas and liquid reactant, and thereafter the reactants are transported to the reactant compartment; and

wherein the reactant compartment retains the liquid reactant and wherein the hydrogen gas passes from the reactant compartment to the fuel cell.

2. The fuel supply of claim 1, wherein the reactant compartment comprises a gas permeable, liquid impermeable membrane, wherein hydrogen gas passes through the membrane to the fuel cell.

3. The fuel supply of claim 1, wherein the fuel cartridge further comprises a valve and the valve selectively allows hydrogen gas to pass through to the fuel cell.

4. The fuel supply of claim 1, wherein the fuel cartridge further comprises a pump to transport fuel from the fuel compartment to the reaction chamber.

5. The fuel supply of claim 1, wherein the outer casing is substantially impermeable to hydrogen gas.

6. The fuel supply of claim 5, wherein hydrogen gas is stored within the outer casing.

7. The fuel supply of claim 1, wherein the walls of the fuel compartment and the reactant compartment are integrally formed.

8. The fuel supply of claim 7, wherein the fuel compartment and the reactant compartment are separated by a movable wall.

9. The fuel supply of claim 8, wherein the movable wall forms a seal with the walls of the reactant compartment and fuel compartment.

10. The fuel supply of claim 9, wherein the seal comprises a wiper or an o-ring pressing against the walls of the reactant compartment and fuel compartment.

11. The fuel supply of claim 1, wherein the fuel comprises sodium borohydride.

12. The fuel supply of claim 11, wherein the liquid reactant comprise sodium borate.

13. The fuel supply of claim 11, wherein the reaction chamber comprises platinum or ruthenium.

14. The fuel supply of claim 1, wherein the fuel comprises methanol.

15. The fuel supply of claim 1, wherein the reaction chamber comprises a catalyst.

16. The fuel supply of claim 1, wherein the fuel compartment comprises a liner and the fuel is contained in the liner.

17. The fuel supply of claim 1, wherein the reactant compartment comprises a liner and the reactants are contained in the liner.

18. A fuel supply containing fuel for use by a fuel cell comprising:

an outer casing encasing a fuel compartment containing the fuel, a reactant compartment and a reaction chamber;

wherein the fuel is transported to the reaction chamber and reacts to form reactants comprising hydrogen gas and liquid reactant, and thereafter the hydrogen gas is transported to the fuel cell and the liquid reactant is transported to the reactant compartment;

wherein the liquid reactant further reacts with an additional reactant to produce a gas to increase the pressure within the reactant compartment to push fuel out of the fuel compartment.

19. The fuel supply of claim 18, wherein the additional reactant is a metal.

20. The fuel supply of claim 18, wherein the additional reactant is a catalyst.

21. The fuel supply of claim 18, wherein the fuel cartridge further comprises a valve and the valve selectively allows hydrogen gas to pass through to the fuel cell.

22. The fuel supply of claim 18, wherein the fuel cartridge further comprises a pump to transport fuel from the fuel compartment to the reaction chamber.

23. The fuel supply of claim 18, wherein the walls of the fuel compartment and the reactant compartment are integrally formed.

24. The fuel supply of claim 23, wherein the fuel compartment and the reactant compartment are separated by a movable wall.

25. The fuel supply of claim 24, wherein the movable wall forms a seal with the walls of the reactant compartment and fuel compartment.

26. The fuel supply of claim 25, wherein the seal comprises a wiper or an o-ring pressing against the walls of the reactant compartment and the fuel compartment.

27. The fuel supply of claim 18, wherein the fuel comprises sodium borohydride.

28. The fuel supply of claim 27, wherein the liquid reactant comprise sodium borate.

29. The fuel supply of claim 27, wherein the reaction chamber comprises platinum or ruthenium.

30. The fuel supply of claim 18, wherein the fuel comprises methanol.

31. The fuel supply of claim 18, wherein the reaction chamber comprises a catalyst.

32. The fuel supply of claim 18, wherein the fuel compartment comprises a liner and the fuel is contained in the liner.

33. The fuel supply of claim 18, wherein the reactant compartment comprises a liner and the reactants are contained in the liner.

34. The fuel supply of claim 32, wherein the reactant compartment comprises a second liner and the liners are separated by a movable well.

35. A fuel supply comprising an outer casing and at least two inner liners, wherein an absorbent material is positioned between the inner liners, and wherein one of the liners contains fuel and is in fluid communication with a valve connecting said liner to a fuel cell.

36. The fuel supply of claim 35 further comprising at least one potential energy storage element acting on the liner containing fuel.

37. The fuel supply of claim 36, wherein the spring potential energy storage element comprises a foam.

38. The fuel supply of claim 36, wherein the spring potential energy storage element comprises a spring.

39. A fuel supply for a fuel cell comprising a flexible outer casing and a flexible inner liner containing fuel, wherein the fuel supply is sized and dimensioned to be received in a compartment in an electronic device, and wherein the inner liner is in fluid communication with a valve connecting said inner liner to the fuel cell inside the electronic device.

40. The fuel supply of claim 39 further comprising an absorbent material disposed between the two liners.

41. The fuel supply of claim 39, further comprising a third liner made from an absorbent material and positioned between the inner liner and the outer liner.

42. The fuel supply of claim 39, further comprising an absorbent material positioned between inner and outer liners.

43. A fuel supply for a fuel cell adapted for insertion into an electronic device comprising a movable guide arm mounted on the fuel supply, wherein the guide arm is moved from a first position to a second position before the fuel supply is inserted into the electronic device.

44. The fuel supply of claim 43, wherein the first position is an original position.

45. The fuel supply of claim 44, wherein the second position is an insertion/removal position.

46. The fuel supply of claim 45, wherein in the insertion/removal position the guide arm is aligned with a corresponding channel on the electronic device.

47. The fuel supply of claim 43, wherein the guide arm is spring-biased.

48. The fuel supply of claim 43, wherein the guide arm is mounted co-axially with a control valve connecting the fuel supply to a fuel cell in the electronic device.

49. The fuel supply of claim 48, wherein the guide arm is mounted spaced from the control valve.

50. The fuel supply of claim 43, wherein after the fuel supply is inserted, the guide arm returns to the original position to retain the fuel supply inside the electronic device.

51. The fuel supply of claim 43, wherein the guide arm comprises a cover that seals a shut-off valve connecting the fuel supply to a fuel cell in the electronic device before its first use.

52. The fuel supply of claim 43, wherein the guide arm comprises a cover that protects the shut-off valve.

53. The fuel supply of claim 43, wherein the guide arm extends from a front portion of the fuel supply to a back portion of the fuel supply.

54. The fuel supply of claim 43, wherein the movable guide arm is rotatable.

55. The fuel supply of claim 43, wherein the movable guide arm is bendable.

56. The fuel supply of claim 53, wherein the bendable guide arm is flexible.

57. The fuel supply of claim 43, wherein the movable guide arm is slidable.

58. A method for forming fuel supply for fuel cell comprising the steps of:
providing an upper layer
forming at least one blister on the upper layer
laminating a backing layer to the upper layer and forming at least one fuel reservoir between the upper and backing layers; and
attaching a valve to the at least one blister reservoir.

59. The method of claim 58 further comprising the step of scoring perforating lines around the at least one blister reservoir.

60. The method of claim 58 further comprising the step of forming at least one guide tab from the backing and upper layers around the at least one blister reservoir.

61. The method of claim 60 further comprising the steps of aligning the guide tabs to corresponding channels on an electronic device and inserting the fuel supply into the electronic device.

62. A method for forming fuel supply for fuel cell comprising the steps of:
providing a plurality of materials suitable for use as the fuel supply;
co-extruding a seamless tube from the multiple materials;
attaching at least one end cap having predetermined shapes to the seamless tube to form the fuel supply; and
attaching a valve to the fuel supply.

63. The method of claim 62 further comprising the step of sealing one end of the tube to itself.

64. A method for forming a fuel supply for fuel cell comprising the steps of:
providing an inner liner adapted to contain fuel;
attaching a valve to the inner liner;
providing an outer casing comprising at least two portions;
attaching one portion of the outer casing to a neck portion of the inner liner proximate to the valve;
attaching the other portion of the outer casing to the neck portion of the inner liner; and
attaching the two portions of the outer casing to each other.

65. A fuel supply comprising an outer casing, at least one inner liner and a potential energy storage element, wherein the liner contains fuel and is in fluid communication with a valve

connecting said liner to a fuel cell, and wherein the outer casing comprises internal ribs to guide the movement of the liner and the potential energy storage element, when fuel is transported into or out of the liner.

66. The fuel supply of claim 65, wherein the potential energy storage element comprises a foam.

67. The fuel supply of claim 65, wherein the potential energy storage element comprises a spring.

68. A fuel supply comprising an outer casing, at least one inner liner and a potential energy storage foam, wherein the liner contains fuel and is in fluid communication with a valve connecting said liner to a fuel cell, and wherein the foam comprises multiple zones of different porosity.

69. The fuel supply of claim 68, wherein the zone of highest porosity is space farthest from the liner.

70. The fuel supply of claim 68, wherein the foam defines a plurality of vent holes.

71. A fuel system comprising a fuel supply encased by a sealed bag, wherein the fuel supply comprises an outer casing and wherein the fuel is contained within the outer casing and the fuel is in fluid communication with a shut-off valve disposed on the fuel supply.

72. The fuel system of claim 71, wherein the fuel is contained in a liner and the liner is disposed inside the outer casing.

73. The fuel system of claim 71, wherein the bag is shrink wrapped to the fuel supply.